

**EWARTITHRIPS NEW GENUS
(THYSANOPTERA: THIRIPIDAE) AND FOUR
NEW SPECIES FROM CALIFORNIA**

SUEO NAKAHARA

Systematic Entomology Laboratory, PSI, Agricultural Research Service, USDA,
10300 Baltimore Avenue, Beltsville, Maryland 20705-2350

Abstract.—A new genus, *Ewartithrips*, and four new species, *E. californicus*, *E. dispar*, *E. flavidus* and *E. salviae*, are described from California. *Tenothrips ehrhornii* and *Taeniothrips longirostrum* are reassigned to *Ewartithrips* (NEW COMBINATIONS). A key is proved for identifying eight genera to which former nearctic *Taeniothrips* species were reassigned.

Key words: Thysanoptera, Thripidae, *Ewartithrips*, new genus, new species, new combinations.

Since the generic concept of *Taeniothrips* was revised (Mound et al., 1976; Bhatti, 1978), most species in the genus have been reassigned to other genera. In the latest reassignment of a Nearctic *Taeniothrips* species by Bhatti (1990), *Taeniothrips ehrhornii* (Moulton) was assigned to *Tenothrips*. Although *ehrhornii* is anatomically similar to *frici* (Uzel), the type species of *Tenothrips*, I conclude that they are not congeneric. The current generic assignment of *Taeniothrips longirostrum* (Jones) from California is also incorrect, and this species and *ehrhornii* are congeneric. Thus, *ehrhornii*, *longirostrum* and four new species, *californicus*, *dispar*, *flavidus* and *salviae*, are assigned here to a new genus *Ewartithrips*. The six species occur only in California except for *californicus* which also occurs in Baja California, Mexico. The only species remaining in *Taeniothrips* in the Nearctic Region are *eucharii* (Whetzel), *orionis* Treherne and *inconsequens* (Uzel).

METHODS AND TERMINOLOGY

The following terms are used for the reduced forewings in *dispar*. Brachypterous forewings = short, oval. Micropterous forewings = reduced to a small lobe or a stub with several setae.

Pigmented facets of the compound eye (Fig. 34): When pigmented ommatidial facets are present, 2 lateral marginal and 1–5 ventral facets are usually pigmented in a distinct pattern.

Campaniform sensilla are small porelike structures which are present on the abdominal tergites (Fig. 18B) and present or absent from the mesonotum (Fig. 12) and metanotum (Fig. 16).

Some of the anatomical structures used in this study are indicated on the following figures.

Chaetotaxy of head—Figure 4. Major setae on pronotum—Figure 11. Setae and campaniform sensilla on abdominal tergite—Figure 18. Posteromarginal comb on abdominal tergite VIII—Figure 22. Anteromedian setae on abdominal sternite I—Figure 23. Posteromarginal setae on sternite VII—Figure 25. Chaetotaxy and cam-

paniform sensilla on male tergite IX—Figure 29. Glandular area on male abdominal sternite—Figure 31.

The measurements of the structural characters are given in microns except for body length, which is in millimeters. Measurements and number of anatomical structures of the holotype or lectotype in a description are given first, followed by those of the paratypes and identified material in parentheses. However, the measurements of the antennal segments may be presented differently and are explained in the text.

Acronyms of the depositories of types and examined material: CAS = California Academy of Sciences; CDFA = California Department of Food and Agriculture, Sacramento; FSCA = Florida State Collection of Arthropods; SMF = Forschungsinstitut Naturmuseum Senckenberg, Frankfurt am Main; BMNH = The Natural History Museum, London; UNAM = Universidad Nacional Autonoma de Mexico, Mexico City; UCD = University of California at Davis; UCR = University of California, Riverside; and USNM = United States National Museum of Natural History, Washington D.C.

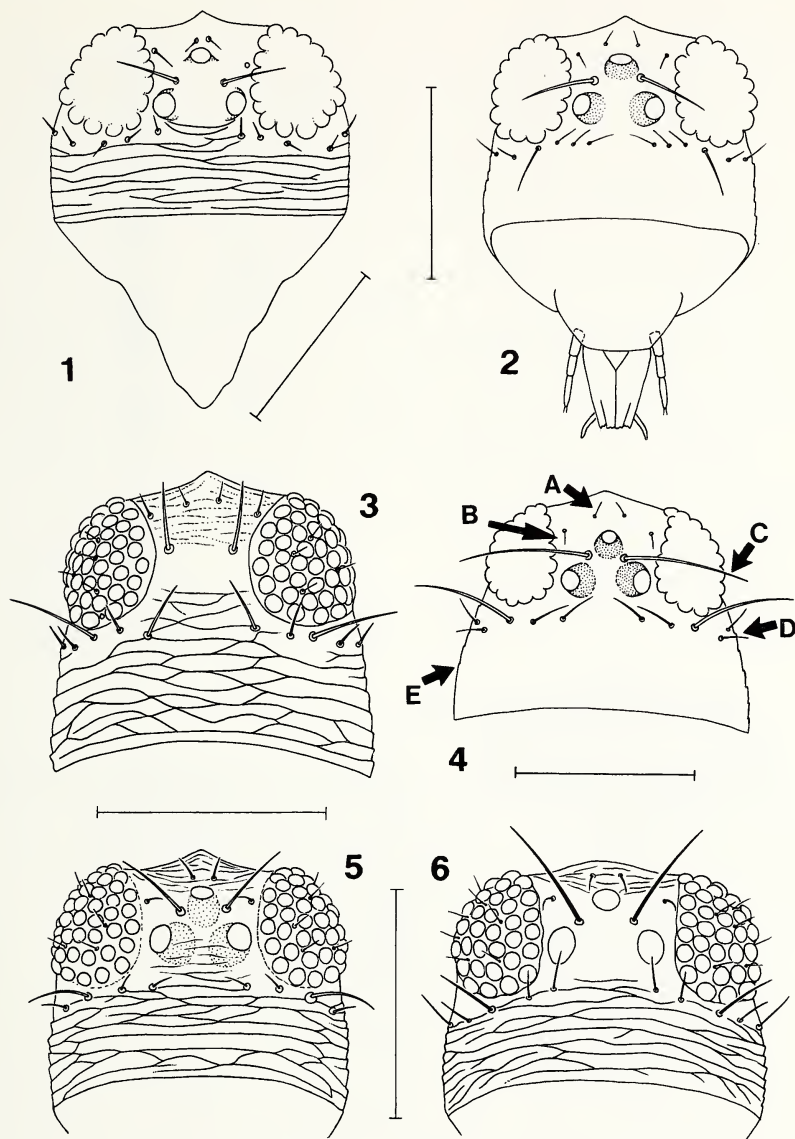
TAXONOMY

Members of *Ewartithrips*, NEW GENUS, have similar anatomical structures to some former *Taeniothrips* species now assigned to several genera. *Ewartithrips* is most similar to *Tenothrips* and *Ceratothrips*. The three genera belong in the *Megalurothrips* genus group, Thripina-Thripini, of Mound and Palmer (1981). The similar structures are: Antennae 8-segmented, segments III and IV each with a forked trichome; head with three pairs of ocellar setae; pronotum with two pairs of posteroangular setae; metanotum reticulated medianly and the median pair of setae on or near anterior margin except further posterior on micropterous form; abdominal tergites lack ctenidia; and the median tergal setae far apart. The structural characters differentiating these genera are treated in the following key.

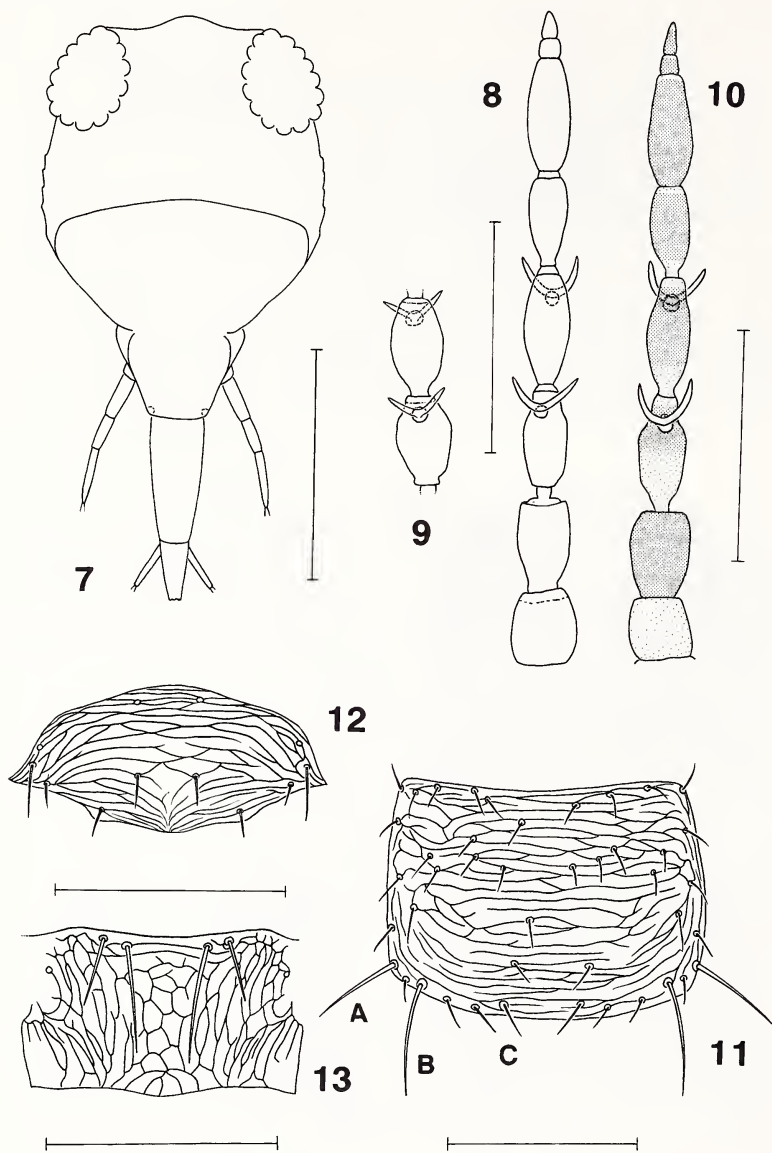
An updated key to the genera of Thripidae for the continental United States and Canada is unavailable. *Ewartithrips* species will run to *Taeniothrips* in couplet 36 of the generic key in Stannard (1968). The following key differentiates most of the genera to which former nearctic *Taeniothrips* species were reassigned.

KEY TO GENERA

1. Pronotum with 1 pair of posteromarginal setae; forewing with few setae on hind vein and fringe cilia straight *Catinathrips*
 Pronotum with 2 or more pairs of posteromarginal setae (Fig. 11C); forewing, when developed, with a row of setae on hind vein and fringe cilia wavy 2
- 2(1) Head with 2 pairs of ocellar setae 3
 Head with 3 pairs of ocellar setae (Fig. 4A–C) 5
- 3(2) Abdominal tergite VIII without posteromarginal comb; tergite IX lacks campaniform sensilla; forewing with 2 distal setae on fore vein; male with a pair of long processes on abdominal segment IX (Fig. 33A) *Dorcadothrips*
 Abdominal tergite VIII with complete or medially interrupted comb; tergite IX with campaniform sensilla; forewing with 2 or more distal setae on fore vein; male without process on abdominal segment IX 4
- 4(3) Abdominal tergites V–VIII with pair of ctenidia (Fig. 32A); tergite VIII with complete or medially interrupted posteromarginal comb *Thirps*



Figs. 1-6. Heads, ♀. 1. *E. californicus*. 2. *E. ehrhornii*. 3. *E. dispar* micropterous form. 4. *E. dispar* brachypterous form. A. ocellar setae I; B. ocellar setae II; C. ocellar setae III; D. postocular setae; E. cheek. 5. *E. salviae*. 6. *E. flavidus*. Scale for figures = 0.1 mm. Same scale for Figures 8 and 9, and 20 and 21. No scale for Figures 32-35.



Figs. 7-13. 7. Head of *E. longirostrum* ♀. 8. Antenna of *E. dispar* macropterous ♀. 9. Antennal segments III and IV of *E. dispar* micropterous ♀. 10. Antenna of *E. flavidus* ♀. 11. Pronotum of *E. flavidus* ♀. 12. Mesonotum of *E. salviae* ♀. 13. Metanotum of *E. flavidus* ♀.

- Abdominal tergites without ctenidia; tergite VIII with complete posteromarginal comb (cf. Fig. 22A) *Taeniothrips*
- 5(2) Forewing with 2 setae in distal half of fore vein; abdominal tergite VIII with complete posteromarginal comb (cf. Fig. 22A); eye with 5 pigmented facets (cf. Fig. 34) 6
- Forewing with 3 or more setae in distal half of fore vein or wing brachypterous, micropterous or absent; other characters various 7
- 6(5) Pronotum with 3–4 pairs of posteromarginal setae (cf. Fig. 11C); abdominal sternite VII with B1 and B2 setae cephalad of posterior margin; male with many small glandular areas on abdominal sternites III–VII *Pezothrips*
- Pronotum with 2 pairs of posteromarginal setae; abdominal sternite VII with only B1 setae cephalad of posterior margin (cf. Fig. 25A); male with an elliptical glandular area on each abdominal sternites III–VII. *Mycterothrips*
- 7(5) Eye with 5 pigmented facets (cf. Fig. 34); abdominal pleurotergite II with a short seta near anterior margin (cf. Fig. 35A); tergite VIII with medially incomplete posteromarginal comb *Tenothrips*
- Eye without pigmented facets; abdominal pleurotergite II without small seta, only rarely on one side; tergite VIII with posteromarginal comb present or absent 8
- 8(7) Abdominal sternite VII with B1 setae cephalad of posterior margin (Fig. 25A); tergite VIII with posteromarginal comb complete (Fig. 22A), except *dispar* (Fig. 28); forewing with 3–8 distal setae on fore vein; male with 1 glandular area on each abdominal sternites III–VI or VII *Ewartithrips* n. gen.
- Abdominal sternite VII with B1 setae on posterior margin; tergite VIII without posteromarginal comb; forewing normally with 3 distal setae on fore vein; male with 3 glandular areas on each abdominal sternites III–VII *Ceratothrips*

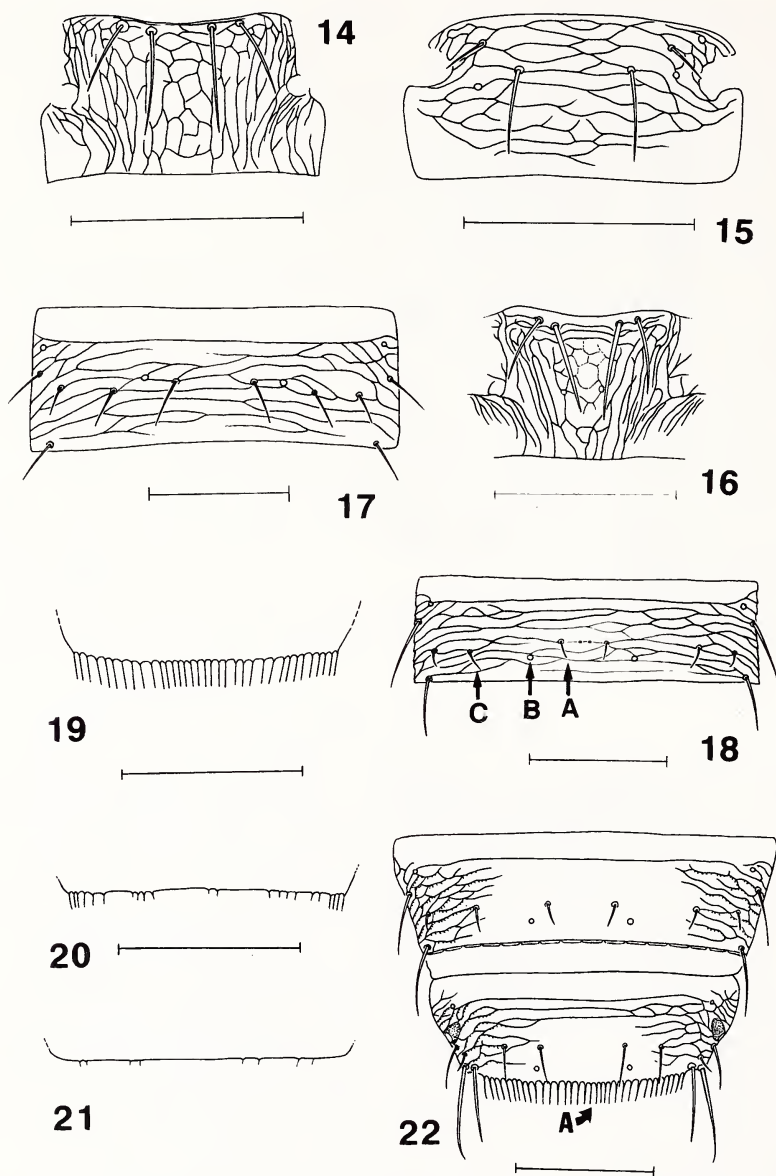
Ewartithrips, new genus

Type species. *Euthrips ehrhornii* Moulton.

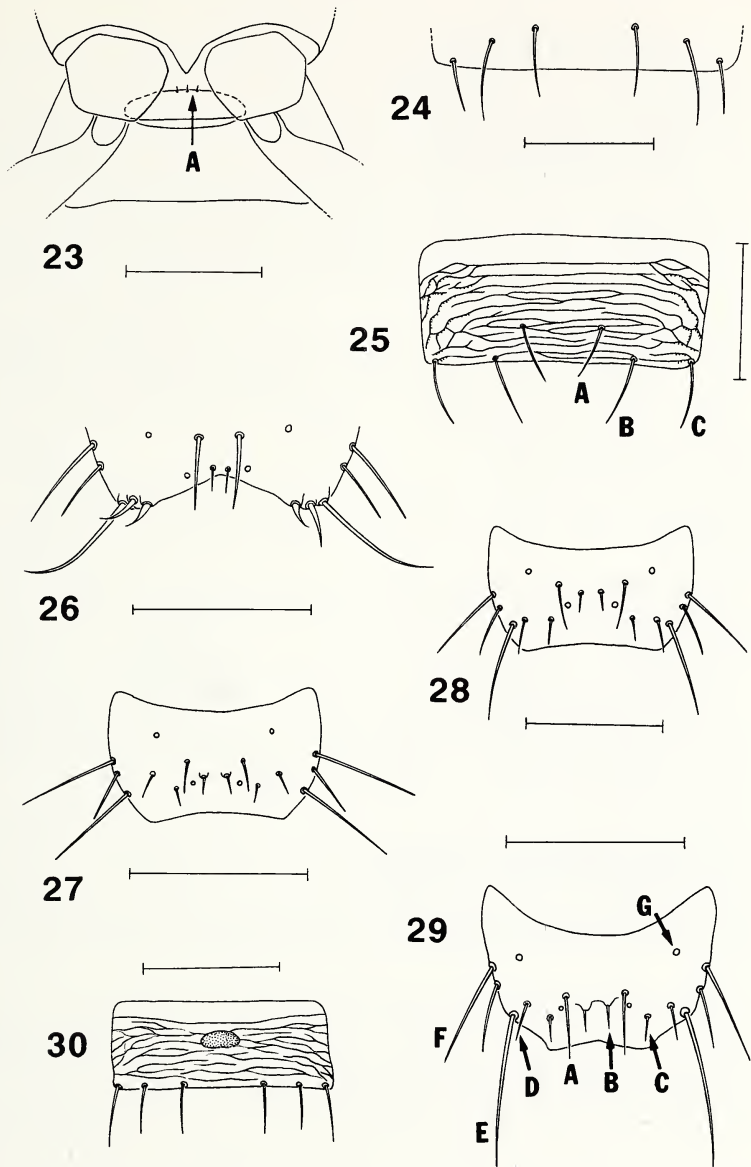
Female: *Antenna:* 8-segmented, segments III and IV each with a forked trichome. *Head* with 3 pairs of ocellar setae, setae I aligned transversely; postocular setae 5 or 6 pairs, with 3rd or 4th seta longest; eyes with dorsal ommatidial facets similar in size, pigmented facets absent; maxillary palps 3-segmented. *Pronotum:* Wider than long; 2 pairs of well developed posteroangular setae; posteromarginal setae normally 3 pairs, median pair largest; basantra without setae; ferna complete; prospinasternum a transverse band, spina tuberculate posteromedially. *Mesonotum:* Submedian setae far anterior of posterior margin; sternum with well developed furca and spinula; mesopraesternum with anteromedial tooth that inserts into spina. *Metanotum:* Median setae on or near anterior margin, further posterior in micropterous form; sternum with well developed furca, spinula absent. *Forewing:* Macropterous, brachypterous, or micropterous. *Abdomen:* Median setae far apart; posteromarginal comb complete on tergite VIII with microtrichia well-developed and close-set, except short, sparse or absent in *dispar*; tergite IX with 2 pairs of campaniform sensilla; tergite X almost divided by dorsal split; pleurotergite II without short seta near anterior margin; sternite I with short, anteromedian setae; accessory sternal setae absent.

Male macropterous or micropterous: Abdominal tergite IX with B1 setae bristle-like; sternites with elongate, oval, or circular glandular areas.

Etymology: This genus is named in honor of William H. Ewart, retired thysanopterist and former Professor at the University of California at Riverside, who collected much of the material in this study.



Figs. 14–22. 14. Metanotum of *E. dispar* macropterous ♀. 15. Metanotum of *E. dispar* micropterous ♀. 16. Metanotum of *E. californicus* ♀. 17. Abdominal tergite IV of *E. dispar* micropterous ♀. 18. Abdominal tergite VI of *E. salviae* ♀. A. medium or D1 setae; B. campaniform sensillum; C. D2 seta. 19. Posteromarginal comb on abdominal tergite VIII of *E. ehrhornii* ♀. 20 and 21. Posteromarginal comb on abdominal tergite VIII of *E. dispar* ♀. 22. Abdominal segments VII and VIII of *E. flavidus* ♀. A. posteromarginal comb.



Figs. 23–30. 23. Abdominal sternite I of *E. salviae* ♀. A. anteromedian setae. 24. Abdominal sternite VII of *E. californicus* ♀. 25. Abdominal sternite VII of *E. flavidus* ♀. 26–29. Abdominal tergite IX, ♂. 26. *E. californicus*. 27. *E. dispar*. 28. *E. flavidus*. 29. *E. salviae*. A. D1 seta; B. B1; C. B2 seta; D. B3 seta; E. posterolateral seta; F. midlateral seta; G. campaniform sensillum. 30. Abdominal sternite IV of *E. flavidus* ♂.

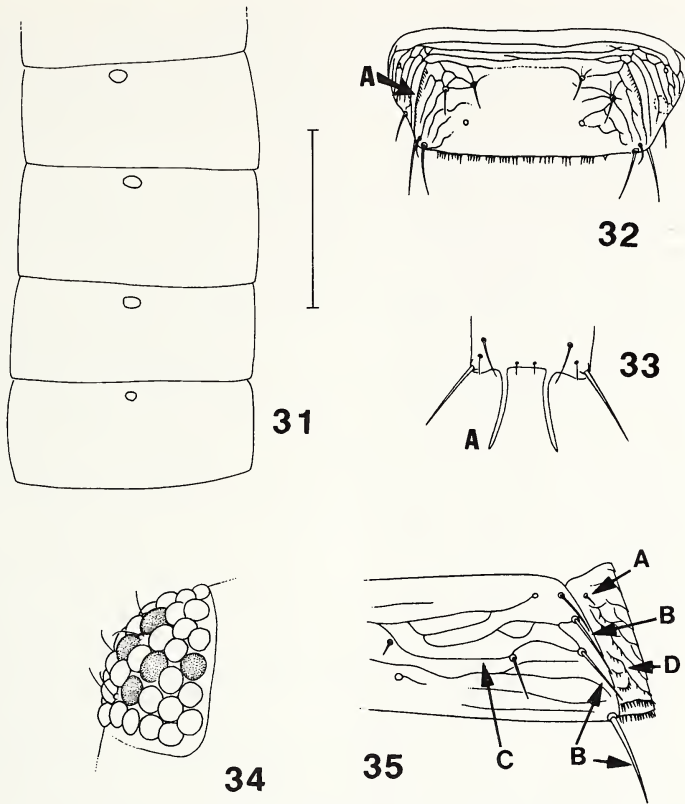
KEY TO SPECIES OF EWARTITHRIPS

1. Females 2
- Males 7
- 2(1) Abdominal sternite VII with B1-B2 setae anterior of posterior margin (Fig. 24);
postocular setae short, subequal in size (Fig. 1) *californicus* n. sp.
- Abdominal sternite VII with only B1 setae anterior of posterior margin (Fig. 25);
usually 1 pair of postocular setae distinctly longer than others (Fig. 4) 3
- 3(2) Posteromarginal comb on abdominal tergite VIII short, microtrichia sparse or ab-
sent (Figs. 20, 21); macropterous, brachypterous or micropterous *dispar* n. sp.
- Posteromarginal comb on abdominal tergite VIII well-developed, complete (Fig.
22); macropterous 4
- 4(3) Antennal segment VI yellow in basal $\frac{1}{2}$; abdominal tergites sculptured completely
(Fig. 18), sculpture weaker on intermediate and posterior tergites *salviae* n. sp.
- Antennal segment VI brown; abdominal tergites without median sculpture on in-
termediate and posterior tergites 5
- 5(4) Body predominantly yellow *flavidus* n. sp.
- Body predominantly brown 6
- 6(5) Mouthcone elongate conical or prementum to apex subcylindrical, extending into
mesosternum (Fig. 7), 148–165 μ m long; maxillary palps 52–57 μ m long; on
lupins *longirostrum* (Jones)
- Mouthcone conical, extending to position between procoxae (Fig. 2), 124–136 μ m
long; maxillary palps 42–47 μ m long; various hosts *ehrhornii* (Moulton)
- 7(1) Micropterous *dispar* n. sp.
- Macropterous 8
- 8(7) Abdominal tergite IX with B1 setae medially near posterior margin, B2 setae thick-
er basally, strongly tapered distally (Fig. 26) *californicus* n. sp.
- Abdominal tergite IX with B1 setae between or posterior of D1 setae, B2 setae
slender, bristlelike (Fig. 29) 9
- 9(8) Antennal segment III, IV, most of V and basal $\frac{1}{2}$ of VI yellow; 3rd postocular seta
longest *salviae* n. sp.
- With different combination of characters 10
- 10(9) Body predominantly yellow; abdominal sternites III–VII each with a small circular
glandular area *flavidus* n. sp.
- Body brown; abdominal sternites III–VI with a glandular area, absent from VII
(Fig. 31) 11
- 11(10) Mouthcone conical, extending posteriorly to position between procoxae, 94–104
 μ m long; mandible 86–100 μ m long; maxillary palp about 37 μ m long; various
hosts *ehrhornii* (Moulton)
- Mouthcone elongate, extending posteriorly to mesosternum, about 131 μ m long;
mandible 131 μ m long; maxillary palps 47–57 μ m long; on lupins
..... *longirostrum* (Jones)

Ewartithrips californicus, new species

(Figs. 1, 16, 24, 26)

Female (macropterous): Body brown or yellowish brown with yellow internal pig-
ments; legs with all tarsi yellow, foretibia yellowish brown, mid- and hindtibia brown
or with apex yellowish brown, femora brown, or all tibiae and femora yellowish
brown; forewings light brownish yellow, base pale; major setae light brown; ocellar



Figs. 31–35. 31. Glandular areas on abdominal sternites III–VI of *E. longirostrum* ♂. 32. Abdominal tergite VIII of a *Thrips* species. A. ctenidia. 33. Abdominal tergite IX of ♂ *Dorcadothrips* species. A. elongate process. 34. Facetal pigmentation of the eye of *Thrips nigropilosus* Uzel. 35. Tergite and pleurotergite of abdominal segment II of a *Thrips* species. A. short seta near anterior margin; B. lateral setae; C. tergite; D. pleurotergite.

crescent orange; antennae brown except apex of segment II yellowish brown, basal $\frac{1}{2}$ of III yellow, basal $\frac{1}{4}$ of V and base of VI yellowish brown.

Antenna: Segment III about 2.3 times as long as wide, constricted apical part short; forked trichome on III–IV strongly divergent, V-shaped, 22 (24) μm long on IV; inner sense cone on VI extending to apex of segment or basal part of VII, 20 (17–22) μm long.

Head (Fig. 1): Wider than long, cheeks slightly arched; occiput about $\frac{3}{5}$ as long as eye, transversely sculptured. Three small, anteromedial tubercles present or absent cephalad of fore ocellus. Ocellar setae III between fore and hind ocelli, inside or on border of ocellar triangle; postocular setae 5 pairs, subequal in length. Mouthcone conical; mandible 124 (104–131) μm long; maxillary palps 47 (50) μm long.

Pronotum: About as long as head, with rather broad anastomosing transverse striae. Discal setae 37 (31–38) present; outer posteroangular setae $\frac{1}{3}$ – $\frac{2}{5}$ as long as pronotum,

inner pair considerably longer than outer pair, slightly less than $\frac{1}{2}$ to $\frac{2}{3}$ as long as pronotum; posteromarginal setae 3 pairs, occasionally total of 5 or 7. *Mesonotum*: With transverse anastomosing sculpture; 2 anteromedial campaniform sensilla present. *Metanotum* (Fig. 16): Reticulated, medial reticles irregular and rather broad, laterally with longitudinal sculpture lines; median setae on anterior margin; 2 campaniform sensilla medially on notum.

Forewing: Straight, pointed apically; 29–32 (27–33) costal setae, those at midlength shorter than width of wing; 26–29 (24–28) straight anterior fringe cilia; fore vein with 7–8 (8–9) setae in proximal $\frac{1}{2}$, 6 (6–8) setae in distal $\frac{1}{2}$; hind vein with 14 (13–16) setae; scale with 5 marginal and 1 discal setae.

Abdomen: Abdominal tergites III–VIII without sculpturing between median setae, submarginal sculpture lines with minute microtrichia; median setae on tergites II–VI shorter than D2 setae, slightly anterior of median campaniform sensilla; tergite II with 3 lateral setae; posteromarginal comb on tergite VIII complete with 30–36 close-set microtrichia varying in length up to 20 μm long; tergite IX about as long as tergite X. Sternite I with 2–3 anteromedian setae (cf. Fig. 23); sternite VII with B1–B2 setae anterior of posterior margin, B1 setae further anterior than B2 setae, closer to B2 setae than to each other (Fig. 24).

Male (macropterous): Similar to female in color and most morphological characters, but smaller.

Body length 1.15–1.42 mm, distended. *Antenna*: Length 246–262 μm . *Head*: Mandible 100 μm long; maxillary palps 35–42 μm long. *Pronotum*: Posteroangular setae outer pair considerably shorter than inner pair. *Abdomen*: Tergite VIII with complete posteromarginal comb, microtrichia close-set. Tergite IX with posterior margin emarginate (Fig. 26); D1 setae thick, bristlelike; B1 setae close-set, medially near posterior margin; B2 setae thickened basally, strongly tapering distally, near B3; B3 setae similar to B2 seta, between B2 and posterolateral setae; posterolateral setae curved distally; 2 pairs of midlateral setae curved distally, 1 pair longer; a campaniform sensillum laterad of D1 seta and another between B1 and B2 setae. Sternites III–VII each with an oval or elongate glandular area; on III 27–47 μm wide, 12–15 μm long; on VII 20–27 μm wide, 15 μm long.

Measurements of holotype and female paratypes: Body length 1.57 (1.55–1.75) mm distended. Other measurements in microns. *Antenna*: Total length 283 (269–275); length and width of segment I 24 (24), 32 (30–32); II 42 (37–40), 27 (27–30); III 52 (50–54), 22 (22–23); IV 50 (44–50), 23 (22–24); V 37 (35–37), 20 (20); VI 54 (50–52), 23 (22–24); VII 8 (7–8), 10 (10); VIII 16 (15–16), 7 (7). Length of head from anterior of eyes 100 (100–117), width at eyes 153 (141–153). Pronotum 131 (119–128) long. Forewing 943–963 (889–1007) long, 62 (62–67) wide at midlength. Abdominal tergite IX 74 (74–77) long, tergite X 74 (62–74) long. Length of setae: Ocellar setae I 15 long, setae II 12–15 long, ocellar setae III 50 (40–50) long; longest postocular setae 12–15 long; pronotal posteroangular setae outer pair 44–52 (44–54) long, inner pair 77–79 (57–86) long, median posteromarginal setae 30 (22–37) long; metanotal median setae 57 (57–67) long; B1 setae on tergite IX 99 (96–119) long, B2 setae 104 (89–111) long; B1 setae on tergite X 89 (77–91) long.

Material examined: Holotype ♀, 3 ♀ paratypes, El Segundo, California, *Lupinus chamissonis* Eschsch., 15-II-39, W. D. Pierce (USNM). Other paratypes: CALIFORNIA: Los Angeles Co., El Segundo, 4 ♀, *Encelia californica* Nutt., 15-II-39, Pierce

& Kanakoff; 1 ♂, *Rhus integrifolia* Brew. & Wats., 18-II-39, W. D. Pierce; 1 ♀, 2 ♂, compositae, 25-II-39, W. D. Pierce; 1 ♂, *Lupinus* sp., 11-III-39, Pierce & Pool; 2 ♀, *Lupinus truncatus* Nutt., 29-III-39, W. D. Pierce; 1 ♀, *Erysimum asperum* (Nutt.) DC., 31-III-39, G. P. Kanakoff; 3 ♀, 1 ♂, *Senecio californicus* DC., 15-IV-39, Pierce & Augustson; 1 ♀, 2 ♂, *Encelia californica*, 25-IV-39, J. A. Comstock. El Segundo dunes, 4 ♂, *Camissonia cheiranthifolia* (Hornem. ex Spreng.) Raimann, 30-III-88, W. Ewart; 1 ♀, *Chaenactis glabriuscula* DC., 20-III-88, W. Ewart; 3 ♀, *Lotus scoparius* (Nutt.) Greene, 30-III-88, W. Ewart; 1 ♀, *Lupinus chamissonis*, 30-III-88, W. Ewart. San Diego Co., Encinitas, 4 ♀, *Chaenactis glabriuscula*, 2-VII-35, S. F. Bailey. MEXICO: Baja California, 2 ♀, *Dudleya* sp., 22-IV-68, R. O. Parsons, at agricultural quarantine, San Ysidro (6313). Paratypes deposited in CDFA, UCD, UCR and USNM.

Distribution: Mexico (Baja California), United States (California).

Etymology: Species named after the state of California, the type locality.

Collected from: *Camissonia cheiranthifolia* (Hornem. ex Spreng.) Raimann, *Chaenactis californica* DC., *Dudleya* sp., *Encelia californica* Nutt., *Erysimum asperum* (Nutt.) DC., *Lotus scoparius* (Nutt.) Greene, *Lupinus chamissonis* Eschsch., *L. truncatus* Nutt., *Lupinus* sp., *Senecio californicus* DC., *Rhus integrifolia* Brew. & Wats.

Comments: This species is known only from southern California and adjoining Baja California. The subequal postocular setae and the chaetotaxy of abdominal tergite IX of the males differentiate *E. californicus* from its congeners.

Ewartithrips dispar, new species

(Figs. 3, 4, 8, 9, 14, 15, 17, 20, 21, 27)

Euthrips ehrhornii forma brachyptera Jones, 1912:12.

Female (macropterous and brachypterous): Body generally brown with yellow or orange-yellow internal pigments; all tarsi yellow or brownish yellow, tibiae yellow or yellowish brown, femora brown; forewings completely light brownish yellow; ocellar crescent orange-red; major setae brown or yellowish brown; antennae brown except apex of II occasionally yellowish brown, pedicel of III pale yellow and basal $\frac{1}{3}$ yellowish brown or light brown, a light band just distal of pedicellated bases of IV–V. Brachyptera with dark brown abdomen, mesonotum a contrasting yellow.

Antenna (Fig. 8): Segments III–IV about 2.5 times longer than wide, constricted into a neck distal of subapical setae; forked trichomes on III–IV U-shaped, 30–33 μm long; inner sense cone on VI about 20 μm long.

Head (Fig. 4): Wider than long, width at cheeks distinctly wider than at eyes, cheeks progressively wider posteriorly from eyes; occiput about as long as eyes or slightly shorter, sculptured with transverse or broadly anastomosing striae. Several small anteromedial tubercles present or absent anterior of fore ocellus. Ocellar setae III between fore and hind ocelli, inside ocellar triangle. Postocular setae 5–6 pairs, usually 3rd or 4th setae longest. Mouthcone conical; mandible 185 (161–185) μm long; maxillary palps 54–57 μm long.

Pronotum: About as long as head; with transverse and anastomosing sculpture, weaker than on head and mesonotum. Discal setae short, 33–35 present; posteroangular setae about $\frac{1}{2}$ as long as pronotum, outer pair shorter than inner pair; posteromarginal setae 3 pairs, occasionally total of 5. **Mesonotum:** Transversely reticulated, with 2

anteromedial campaniform sensilla. *Metanotum* (Fig. 14): Reticulated, lateral reticles longitudinally elongate, medial ones variable; median setae on anterior margin, longer than lateral setae; 0–2 campaniform sensilla present.

Forewing macropterous: Rather straight, apex pointed; 26–27 (25–27) costal setae, those on midlength longer than width of wing; 26 (22–26) anterior fringe cilia, straight or slightly wavy; fore vein with 8 setae in proximal $\frac{1}{2}$, 5 (4–5, occasionally 3) in distal $\frac{1}{2}$; hind vein with 11–12 (9–13) setae; scale with 5 marginal and 1 discal setae. *Brachypterous forewing*: Oval, extending to first abdominal tergite, with 7–9 marginal, 4–6 veinal setae; scale with 5 marginal, 1 discal setae.

Abdomen: Tergites IV–VII weakly sculptured anterior of median setae, VIII completely sculptured with weak reticulations; median setae about as developed as D2 setae, on tergites IV–VII slightly anterior or between median campaniform sensilla; tergite II with 3 lateral seta; posteromarginal comb on tergite VIII poorly developed (Figs. 20, 21), either complete or absent medially, microtrichia minute to about 15 μm long, sparse to 26 present, irregularly spaced; tergite IX slightly shorter than X; B1 setae on IX longer than X. Sternite I with 2–3 anteromedian setae; sternite VII with median setae far anterior of posterior margin by about 5 times its basal socket (cf. Fig. 25).

Female (micropterous): Body color and most structures similar to that of macroptera.

Antenna: Segment III strongly convex, constricted distal of subapical setae (Fig. 9); segment VII about as wide or slightly wider than long, base about as wide as apex of VI, VIII broadly conical, slightly longer than wide. *Head* (Fig. 3): Shorter than macropterous forms, similar in shape or cheeks straighter. Ocelli absent. Third post-ocular seta longest. *Pronotum*: With weak anastomosing sculpture; 23–25 discal setae; posteroangular setae shorter than those of macropterous form. *Metanotum* (Fig. 17): Lateral setae posterior of anterior margin, median setae in anterior $\frac{1}{3}$ of notum, far apart. *Forewing*: Reduced to a small lobe with 4 setae. *Abdomen*: Tergites with complete anastomosing sculpture (Fig. 17); median setae well developed on II–VIII, aligned with median campaniform sensilla and D2 setae; posteromarginal microtrichia absent from VIII.

Male (micropterous): Similar to micropterous female in color and most anatomical structures.

Body length 1.28 mm, distended. *Antenna*: Length 241 μm . *Head*: 4 pairs of post-ocular setae, third pair longest. *Abdomen*: Tergite VIII without posteromarginal microtrichia. Tergite IX with D1 setae at about midlength, larger than B1–B2 setae (Fig. 27); B2 setae posterior of D1 setae, B1 close to each other, medially between D1 and B2 setae; B3 setae mesad or cephalad of posterolateral seta; posterolateral long; 2 midlateral setae on each side, 1 seta longer; a campaniform sensillum between B1 and B2 setae, another in anterolaterad part of tergite on each side. Sternites III–VII each with a small, glandular area, about 15 μm wide on sternite III (cf. Fig. 30).

Measurements of macropterous holotype followed by those of macropterous and brachypterous female paratypes: Body length 1.5 (1.43–1.54) mm, 1.80 mm partially distended. Other measurements in microns. Antenna: Total length 318 (308–314); length and width of segment I 32 (30–32), 32 (30–37); II 44 (42–44), 24 (27–30); III 59 (54–59), 24 (24); IV 57 (54–57), 22 (22–24); V 44 (44–47), 20 (20–22); VI 57 (54–57), 22 (21–33); VII 10 (10), 10 (10–11), VIII 15 (12–15), 8 (7–8).

Length of head from anterior of eyes 131 (124–131), width at eyes 151 (141–153), at occiput 178 (163–180). Pronotum 148 (136–148) long. Macropterous forewing length 904 (800–926), width 54 (50–54) at midlength; abdominal tergite IX 89 (79–86), tergite X 99 (94–104) long. Length of setae: Ocellar setae I about 12 long, setae II 22 (22–24) long, setae III 77 (67–86) long; longest postocular setae 59 (52–62) long; pronotal posteroangular setae outer pair 68 (52–72) long, inner pair 77 (69–82) long; median posteromarginal setae 30 (24–37) long; median setae on metanotum 50 (47–62) long; B1 setae on tergite IX 124 (104–124) long, B2 setae 138 (117–128) long; B1 setae on tergite X 117 (106–114) long.

Measurements of micropterous female paratypes significantly different from other wing forms: Body length 1.50–1.65 mm fully distended. Other measurements in microns. Antenna: Total length 263–291. Length of head from anterior of eyes 106–117, width at eyes 131–138, at occiput 136–151. Length of setae: Ocellar setae III 40–57 long; third postocular seta (longest) 42–50 long; pronotal posteroangular setae outer pair 42–54 long, inner pair 42–62 long, median posteromarginal setae 22–31 long.

Material examined: Holotype macropterous ♀, 1 macropterous ♀ paratype, Vernalis, California, alfalfa, 11-III-33, N. A. Donges (CAS). Other paratypes: CALIFORNIA: Adelanto, 3 micropterous ♀, *Phacelia* sp., 13-IV-58, W. Ewart; Ducor, 4 macropterous ♀, *Amsinckia* sp., 26-II-64, W. Ewart; Hesperia, 5 micropterous ♀, *Amsinckia* sp., 13-IV-58, W. Ewart; Hwy 466, 2 mile N. Mohave, 26 micropterous ♀, *Amsinckia* sp., 26-II-64, W. Ewart and O. L. Brawner; 2 mi N. Mohave, 2 micropterous ♀, grass, 28-III-57, W. Ewart; Porterville, 1 macropterous ♀, *Amsinckia* sp., 3-V-58, W. H. Ewart; Hwy 395 at Phelan intersection, San Bernardino Co., 1 micropterous ♀, 1 macropterous ♂, *Amsinckia* sp., 22-IV-78, W. Ewart; Hwy 6, 4 mile N. Rosamond, 7 micropterous ♀, *Amsinckia* sp., 26-II-64, W. Ewart; San Jose, 2 brachypterous ♀, wild flower, 31-III-10, P. R. Jones (USNM); Tracy, 3 macropterous ♀, alfalfa and *Amsinckia* sp., 11-III-33, N. A. Donges (UCD, USNM); North Fork Tule River near Success Dam, Tulare Co., 1 brachypterous and 1 macropterous ♀, *Amsinckia* sp., 1-II-65, O. Brawner; Hwy 91, 1 mile N. Victorville, 2 micropterous ♀, *Amsinckia* sp., 24-III-62, W. Ewart. Unless indicated, the paratypes are deposited in CDFA, BMNH, SMF, UCD, UCR, USNM. Most of the paratypes are deposited in UCR.

Distribution: United States (California).

Collected from: *Amsinckia* sp., *Medicago sativa* L., *Phacelia* sp., wild flower. True host *Amsinckia* sp.

Etymology: Specific epithet derived from Latin “dispar” (different).

Comments: Three micropterous specimens collected on *Phacelia* from Adelanto do not have ocellar setae I. However, other structures are similar to micropterous specimens collected from other hosts, and therefore are treated here as *dispar*.

Ewartithrips dispar is the most divergent of the species assigned to this genus by having a large body, occiput about same length or slightly shorter than eyes, posteromarginal comb on abdominal tergite VIII poorly developed or absent, and with three wing forms.

The two brachypterous specimens described by Jones (1912:12) as a form of *ehrhornii* are actually *dispar*. Only one additional brachypterous specimen was found in examined material from Tulare County.

This species was collected in Kern, San Bernardino, San Joaquin, Santa Clara and Tulare Counties which are located mainly in the arid central valley and desert area of California.

Ewartithrips ehrhornii (Moulton), **New Combination**

(Figs. 2, 19)

Euthrips ehrhornii Moulton, 1907:54.

Physothrips ehrhornii: Hood, 1914:39.

Taeniothrips ehrhornii: Steinweden, 1933:291; Bailey, 1957:199.

Tenothrips ehrhornii: Bhatti, 1990:203.

Female (macropterous): Body generally dark brown with slightly orange-yellow internal pigments in thorax and abdomen, or thorax more yellowish; head brown or medial part of head yellowish with vertex, submarginal and caudal parts posterior of eyes brown or yellowish brown; legs brown to femora brown with tibiae slightly yellowish brown, tarsi yellow or yellowish brown; ocellar crescent red; setae brown; forewings normally light grayish brown, occasionally pale yellow or slightly pale grayish yellow distally; antennae brown except segment I light brown, paler than head and segment II, III pale yellow in basal $\frac{1}{2}$, gradually light grayish brown distally, IV pale yellow in basal $\frac{1}{4}$, V with white ring slightly distal of base.

Antenna: Segment III about 2.5 times longer than wide, margins convex; forked trichome on IV about 24 μm long, V-shaped; inner sense cone on VI 22 μm long, extending to apex of segment.

Head (Fig. 2): Slightly wider than long, width at eyes and cheeks subequal, cheeks slightly arched; occiput about $\frac{3}{5}$ as long as eyes; ocellar setae III between fore and hind ocelli, inside ocellar triangle; normally fourth postocular setae longest, second or third setae may be longest; mouthcone conical, 124–136 μm long, apex blunt; mandible about as long as mouthcone, 117–136 μm long; maxillary palps 42–47 μm long. **Pronotum:** Slightly shorter than head, transversely sculptured; a short posteromedial line occasionally present; posteroangular setae about $\frac{3}{10}$ to about $\frac{1}{2}$ as long as pronotum, outer pair usually shorter than inner pair; posteromarginal setae 3 pairs.

Metanotum: Reticulated medially, laterally with longitudinally aligned sculpturing; median setae on or near anterior margin; 0–2 campaniform sensilla present. **Forewings:** 27 (24–27) costal setae, those at midlength about as long as width of wing; 21 (23–24) anterior fringe cilia; fore vein with 5–8 (4–9) distal setae; hind vein with 13 (11–12) setae; scale with 5 marginal and 1 discal setae. **Abdomen:** Median setae on anterior and intermediate tergites anterior of median campaniform sensilla, reduced, larger posteriorly; tergites IV–VIII without sculpturing between median setae; posteromarginal comb on tergite VIII complete with 39 (31) close-set microtrichia up to 24 μm long (Fig. 19); sternite I with 1–3 anteromedian setae; B1 setae anterior of posterior margin by about 5 times their bases (cf. Fig. 25).

Male (macropterous): Similar in most anatomical structures to that of female. Body brown with orange-red internal pigments, head yellowish between eyes to vertex; ocellar crescent red; tarsi yellowish brown, tibiae and femora brown to yellowish brown; forewings light brown; setae brown; antenna brown except segment I yellowish brown, lighter than II, III with pedicel and extreme base pale white.

Body length 0.85–1.02 mm, 1.02–1.27 mm distended. *Antenna*: Length 252–270 μm . *Head*: The 3rd or 4th postocular seta longest; mouthcone 94–104 μm long, broadly conical, mandible about same length as mouthcone, 86–100 μm long, maxillary palps about 37 μm long. *Abdomen*: Tergite VIII with well developed posteromarginal comb; tergite IX with setal arrangement similar to those of *flavidus* (cf. Fig. 28). Glandular areas on sternites III–VI, on VI almost circular to slightly oval, varying from 7 μm wide, 7 μm long to 15 μm wide, 12 μm long (cf. Fig. 31).

Measurements of lectotype and other females: Body length 1.21 (partially distended) (1.18 slightly distended to 1.45 fully distended) mm. Other measurements in microns. Antenna 271 (240–298) long. Forewings: 865–869 (754–808) long, 57 wide at midlength. Setal lengths: Ocellar setae III (37–62) long; pronotal posteroangular setae outer pair 52–57 (47–57) long, inner pair 68–71 (54–62) long; metanotal median setae 47–50 long; B1 setae on abdominal tergite IX 96 (94–104) long, B2 setae 111 (101–111) long; B1 setae on tergite X 86 (89) long.

Material examined: Lectotype ♀, 1 paralectotype ♀, Alum Rock Canyon, San Jose, California, grass, 29-V-06, D. Moulton (CAS). Lectotype designated by S. Nakahara. Other material: Alum Rock Park, 2 ♀, grass, 26-IV-49, S. F. Bailey (UCD). Hamet, 1 ♀, *Lotus* sp., 30-IV-58, Ewart and Brawner (UCR); 4 ♂, Chamise, 7 and 20-VII-60, W. Ewart and O. Brawner (UCR); Lompoc, 1 ♀, *Atriplex* sp., 12-V-65, Bets et al. (USNM). Oceano, 1 ♀, sweeping 24-IV-51, S. F. Bailey (UCD). Trinidad, 1 ♀, *Ceanothus* sp., 13-V-30, D. Moulton (CAS); 1 ♀, *Baccharis pilularis* DC., 25-IV-63, T. R. Haig (USNM). Woodside, 1 ♀, *Lupinus* sp., 22-V-26, D. Moulton (CAS). **Distribution:** United States (California).

Collected from: *Atriplex* sp., *Baccharis pilularis* DC., *Ceanothus* sp., grass, *Lotus* sp., *Lupinus* sp.

Comments: Bailey's (1957:199) comments about this species being difficult to distinguish from *longirostrum* hold true. The mouthcones of *longirostrum* (from dorsal-ventral view) females are 148–165 μm long, narrowed and elongate conical or subcylindrical distally. The mandibles are about same length as the mouthcone. In contrast mouthcones of *ehrhornii* based on identified material are 124–136 μm long, and are more broadly conical distally. The mandible is also shorter than those of *longirostrum*. However, these characters can be difficult to use because of distortions. The maxillary palps of *ehrhornii* are slightly shorter than those of *longirostrum*. The forewings of the females are slightly longer (754–869 μm) in *ehrhornii* than *longirostrum* (660–753 μm) but this difference is based on few forewings. The short median line on the pronotum of *longirostrum* mentioned by Bailey (1957:199) is occasionally found on *ehrhornii*.

According to Moulton's (1907:55) description, the forewings are uniform light gray-brown. The more recently collected material determined as *ehrhornii* has grayish brown forewings. However, old material and a specimen collected in 1958 have pale yellow forewings with light grayish shade distally. This difference in coloration could be attributed to the macerating technique or age of the slides. Because most specimens available for study are old, new material is needed to resolve problems of forewing color as well as the shape and length of the mouthcone.

The description of the male is based on four identified specimens from Hamet, California. The male described by Jones (1912:12) as *ehrhornii* is treated here as *longirostrum*. In the USNM collection is a single male on a slide labeled *Euthrips*

ehrhornii [sic] Moulton, ♂, Type, on *Collinsia bicolor* Benth, Los Gatos, Cal., 4/9/10, P. R. Jones Coll. The collection data are the same as that of the holotype of *longirostrum*.

Bailey (1957:199) treated *Euthrips ehrhornii* forma brachyptera of Jones (1912: 12) as a synonym of *ehrhornii*. In the USNM are two specimens with the same collection data given by Jones and labeled as forma brachyptera. They are here treated as a new species, *dispar*.

***Ewartithrips flavidus*, new species**

(Figs. 6, 10, 11, 13, 22, 25, 28, 30)

Female (macropterous): Body yellow or golden yellow with thorax darker golden or orange-yellow; abdomen with tergite I shaded light grayish brown, normally anterior and intermediate tergites light grayish brown in anterior area and median area to posterior margin or just confined to anterior areas, posterior tergites usually completely yellow except apex of X grayish brown, antecostal ridges on III–VII darker grayish brown, or concolorous with tergal derm; legs yellow; ocellar crescent orange-red; major setae brown; forewings pale grayish yellow to light grayish brown, may be paler between dorsal veins. Antennae brown except segment I whitish yellow or light grayish yellow, II brown with base pale yellow, basal $\frac{1}{2}$ of III light yellow, basal $\frac{1}{4}$ of IV light yellow, V with whitish yellow band distal of pedicel (Fig. 10). *Antenna* (Fig. 10): Segment III 2.2–2.5 times longer than wide, constricted distal of subapical setae; forked trichome on III and IV V-shaped, 22–27 μm long on IV; inner sense cone on VI extends slightly beyond apex of segment, 20–24 μm long. *Head* (Fig. 6): Wider than long, margin of vertex somewhat rounded between eyes, cheeks slightly arched, occiput with transverse and anastomosing sculpture. Eyes longer than occiput, interocular distance about 1.5 times wider than width of eye. Anteromedial tubercle absent. Fore ocellus 15 (12–15) μm wide; hind ocelli separated by about twice diameter of fore ocellus. Ocellar setae III between fore and hind ocelli, inside or on border of ocellar triangle, separated by 1.5 to 1.8 times diameter of fore ocellus. Postocular setae 5–6 pairs, normally 4th pair longest, occasionally 3rd pair longest, other setae $\frac{1}{2}$ to $\frac{2}{3}$ as long as longest setae. Minute pores, 2–4 between postocular setae i and hind ocelli. Mouthcone conical; mandible 119 (106–131) μm long; maxillary palps 54 (42–44) μm long.

Pronotum (Fig. 11): About as long as head, with transverse or anastomosing sculpture. Discal setae 36 (34–39) present, short, 1 pair anterior to posteromarginal setae thicker and longer than others; posteroangular setae $\frac{3}{10}$ to $\frac{1}{2}$ as long as notum; posteromarginal setae 3 pairs, median pair longest. *Mesonotum*: Completely sculptured with anastomosing striae; 2 anteromedian campaniform sensilla; submedian setae short, almost aligned with lateral setae. *Metanotum* (Fig. 13): Median $\frac{1}{3}$ reticulated, reticles irregular, rather broad, laterally with longitudinal sculpture; median setae on or near anterior margin; 0–2 campaniform sensilla normally in midlength or farther caudally.

Forewing: Straight, pointed at apex; 22–23 (22–26) costal setae, those at midlength about as long as or slightly shorter than width of wing; 21–22 (23–24) wavy anterior fringe cilia; fore vein with 7 or 8 setae in basal $\frac{1}{2}$, 5 or 6 setae in distal $\frac{1}{2}$; hind vein with 12 (9–13) setae; scale with 5 marginal and 1 discal setae.

Abdomen: Median setae short on anterior tergites, longer caudally, on tergite VIII 24–32 μm long. Median campaniform sensilla progressively closer to posterior margin caudally, on tergite VIII about 1.5 times its diameter cephalad of posterior margin. Sculpture lines absent medially from tergites IV–VIII, extending slightly mesad of D2 setae; submarginal sculpture lines with indistinct microtricha. Posterior margins of VI and VII with low, broad, lobes (Fig. 22). Posteromarginal comb on VIII complete with 33–37 close-set microtrichia, longest 17–22 μm long. Tergite IX longer than tergite X. Sternite I with 2–3 anteromedian setae. B1 setae on sternite VII anterior of posterior margin by 6–7 times their setal base, closer to B2 setae (Fig. 25).

Male (macropterous): Similar to female in color and most morphological structures, but smaller.

Body length 1.15–1.35 mm (distended). **Antenna:** Length 263–278 μm . **Abdomen:** Tergite VIII with complete posteromarginal comb. Tergite IX (Fig. 28) with D1 setae in about midlength of tergite, thick; B1 setae thin, medially between D1 setae or slightly posterior; B2 setae thin, farther posterior and wider apart than D1 setae; posterolateral setae thick, long; a shorter seta anteromesad or mesad of posterolateral setae; midlateral setae 2 on each side, 1 longer and thicker than other; pair of campaniform sensilla posterior of D1 setae, another pair anterolaterad of D1 setae. Sternites III–VII each with oval or circular glandular area (Fig. 30), on III and VII 20–30 μm wide, 12–15 μm long; when circular about 12 μm in diameter.

Measurements of holotype and female paratypes: Body length 1.41 (1.24–1.55) mm distended. Other measurements in microns. **Antenna:** Total length 283 (242–281); length and width of segment I 24 (24), 27 (25–30); II 40 (37–42), 25 (23–25); III 52 (44–52), 21 (20–21); IV 52 (42–52), 20 (18–22); V 40 (32–40), 18 (17–18); VI 50 (44–52), 21 (20); VII 10 (7–10), 10 (8–10); VIII 15 (12–15), 7 (7). Length of head from anterior of eyes 119 (114–131), width at eyes 136 (124–141); pronotum 119 (106–128) long. Forewing 719–746 (650–776) long, 50 (42–50) wide at midlength. Abdominal tergite IX (62–74) long, tergite X (62–64) long. Length of setae: Ocellar setae I about 12 long, setae II about 12 long, setae III 54 (42–54) long; postocular setae iii or iv longest, 27 (22–35) long; pronotal posteroangular setae outer pair 44–47 (27–54) long, inner pair 54–57 (35–59) long, median posteromarginal setae 22–27 (20–27) long; metanotal median setae 52 (42–57) long; median setae on abdominal tergite VIII 24–32 long; B1 setae on tergite IX 109–114 (72–117) long, B2 setae 124 (77–124) long, B3 setae 91 (69–114) long; B1 setae on tergite X 100 (77–100) long, B2 setae 96 (69–96) long.

Material examined: Holotype ♀, 22 ♀ and 14 ♂ paratypes, Murrieta, Riverside Co., California, *Lonicera* sp., 26-II-67, R. J. Gill (USNM). Paratypes. CALIFORNIA: Hwy 128, 13.9 miles W. of Winters, Yolo Co., 54 ♀♀ and 6 ♂, *Adenostoma fasciculatum* Hook. and Arn., 16-IV-66, T. and C. S. Kono; 3 ♀, *Arctostaphylos* sp., 26-III-66, T. and C. S. Kono; 25 ♀, *Cercocarpus betuloides* Nutt., 26-III-66, T. Kono and C. S. Kono. Paratypes deposited in CAS, CDFA, CNC, FSCA, BMNH, SMF, UCD, UNAM, USNM.

Other material examined: CALIFORNIA: Riverside Co., 1 ♂, wild apricot, 16-III-66, W. H. Ewart and O. Brawner (UCR). Green Valley, Solano Co., 1 ♀, chamiso, 29-III-49, S. F. Bailey (UCD). Near Grizzly Springs Lake, Colusa Highway, 1 ♀, grass, 14-V-47, S. F. Bailey (UCD). Mix Canyon, Solano Co., 1 ♀, ceanothus flow-

ers, 6-III-36, S. F. Bailey (UCD); 1 ♀, ceanothus flowers, 6-III-36, S. F. Bailey (UCD); 1 ♀, California laurel, 1-II-39, S. F. Bailey (UCD); 2 ♀♀, laurel flowers, 17-II-39, S. F. Bailey (UCD). Mt. Diablo, Contra Costa Co., 1 ♀, beating, 29-V-51, S. F. Bailey (UCD). Palo Alto, Page Mill Road, Santa Clara Co., 1 ♀, beating manzanita, 27-IV-49, S. F. Bailey (UCD). Near Rumsey, Yolo Co., 1 ♀, ceanothus flowers, 12-IV-49, H. E. Cott (UCD). Zaca Mt., Santa Barbara Co., 1 ♀, chamiso, 1 ♀, beating, 24-IV-51, S. F. Bailey (UCD); Woodside, San Mateo Co., 1 ♀, 1 ♂, honeysuckle, 22-V-26, D. Moulton (CAS).

Distribution: United States (California).

Collected from: *Adenostoma fasciculatum* Hook. and Arn. (=chemiso), *Arctostaphylos* sp. (=manzanita), *Ceanothus* sp., *Cercocarpus betuloides* Nutt. (=betuloides Sarg.), grass, *Lonicera* sp. (=honeysuckle), *Prunus armeniaca* L., (=apricot), *Umbellularia californica* (Hook. and Arn.) Nutt. (=California laurel).

Etymology: Specific epithet derived from Latin "flavidus" (yellowish), which describes the color of the body.

Comments: The yellowish body separates this species from its congeners. According to Bailey (1957), the body of typical *ehrhornii* has a pronounced orange-yellow color. However, the *ehrhornii* types are predominantly brown with completely brown abdomens. None of the *flavidus* populations examined in this study with a long series of pronounced orange-yellow or yellow specimens had any mixture of predominantly brown specimens with completely brown abdomen, although most specimens have pale grayish brown shading on abdominal tergites and metanotum. If my identifications of *ehrhornii* males are correct, the males are brown and have glandular area on abdominal sternites III-VI. Males of *flavidus* are yellow and have glandular area on abdominal sternites III-VII.

Ewartithrips longirostrum (Jones), **New Combination**
(Figs. 7, 31)

Euthrips longirostrum Jones 1912:12.

Physothrips longirostrum: Hood 1914:39.

Mycterothrips longirostrum: Karny 1921:216.

Taeniothrips longirostrum: Steinweden 1933:291.

Female (macropterous): Body generally brown with orange-yellow internal pigments; head often lighter yellowish brown around eyes and vertex; legs with all tarsi yellow, tibiae yellowish brown with margin light brown or mainly yellow, femora yellowish brown or predominantly light brown; forewings pale yellow; ocellar crescent orange-red; major setae brown; antennae brown except segment I light brown, paler yellowish brown in basal $\frac{1}{3}$ of III and in basal $\frac{1}{4}$ of IV, and V with a short pale band just distally of pedicel.

Antenna: Segment III 2.1–2.3 times wider than long; forked trichome on IV V-shaped, 20–24 μm long. **Head** (Fig. 7): Wider than long, width at eyes and cheeks subequal, cheeks slightly arched, occiput about $\frac{1}{5}$ as long as eye; ocellar setae III between fore and hind ocelli, inside ocellar triangle. Postocular setae iii or iv longest. Mouthcone from dorsal-ventral view elongate conical, extending into mesosternum, 148–165 μm long; prementum plus paraglossa 1.5 to more than twice as long as prementum width, occasionally subcylindrical; mandible about as long as mouth-

cone; maxillary palps 52–57 μm long. *Pronotum*: Slightly longer than head, transversely sculptured with anastomosing reticulations, with a short, posteromedial line; posteroangular setae $\frac{1}{3}$ – $\frac{2}{5}$ as long as pronotum, outer pair usually shorter than inner pair; 3 pairs of posteromarginal setae. *Metanotum*: Reticulated, lateral reticles more elongate longitudinally and narrower than medial reticles; median setae on anterior margin; 0–2 campaniform sensilla present. *Forewing*: 21–26 costal setae, those at midlength about as long or longer than width of wing; 17–21 straight anterior fringe cilia; fore vein with 5–6 distal setae, 6–8 setae in proximal $\frac{1}{2}$. *Abdomen*: Tergites III–VIII without median sculpturing; posteromarginal comb on tergite VIII complete with 29–38 close-set microtrichia, mostly 20–24 μm long (cf. Fig. 19); sternite I with 2–3 anteromedial setae, B1 setae on sternite VII far anterior of posterior margin (cf. Fig. 25).

Male (macropterous): Similar to females in color and most morphological characters, but smaller. Antennal segment I pale yellowish brown or more yellowish, lighter than II; II yellowish brown to light brown; III pale yellow in basal $\frac{1}{2}$, light grayish brown distally; basal $\frac{1}{3}$ of IV light yellow, light brown distally; V pale yellow in basal $\frac{1}{4}$, brown distally; VI–VIII brown.

Body length 0.98 mm. *Antenna*: Length 251 μm . *Head*: Mouthcone about 131 μm long, elongate conical, extending posteriorly between procoxae; mandibles about same length as mouthcone; maxillary palps 47–57 μm long. *Abdomen*: Tergite VIII with complete, well-developed posteromarginal comb. Tergite IX with setae bristle-like (cf. Fig. 28); B1 setae between but slightly posterior of thicker and longer D1 setae; B2 setae similar to B1 setae, posterolaterad of D1 setae; B3 setae mesad of posterolateral setae; posterolateral setae largest; 2 midlateral setae on each side, 1 longer; a pair of campaniform sensilla posterior of D1–B1 setae, another pair anterolaterad of D1 setae towards anterior margin. Abdominal sternites III–VI (Fig. 31) each with a small, oval glandular area, about 5 μm long, 7 μm wide on sternite VI. **Measurements of females:** Measurements based on types and identified material: Body length 1.02 to 1.17 mm (partially compacted), 1.43 mm (fully distended). Other measurements in microns. Antenna 235–259 long. Forewing 660–753 long. Length of setae: Ocellar setae III 37–54 long; longest postocular setae 15–22 long; pronotal posteroangular setae outer pair 42–50 long, inner pair 44–50 long; metanotal median setae 42–54 long. B1 setae on abdominal tergite IX 74–119 long, B2 setae 99–136 long; B1 setae on tergite X 79–99 long.

Material examined: *Euthrips longirostrum* Jones, Holotype ♀, 2 paratype ♀, Los Gatos, California, flowers of perennial lupine, 16-IV-10, P. R. Jones (USNM). Other material: CALIFORNIA: El Segundo, 3 ♀, 1 ♂, *Lupinus chamissonis* Eschsch., 15-II-39, W. D. Pierce; Figuerora Mt., 1 ♀, manzanita or lupine, 24-IV-51, S. F. Bailey (UCD); Los Gatos, 1 ♂ (labeled *Euthrips ehrhornii* [sic] Moulton Type) *Colinsia bicolor* Benth., 9-IV-10, P. R. Jones; 1 ♀, blue legume, 16-IV-10, P. R. Jones; San Jose, 1 ♀, blue lupine, 13-IV-11, P. R. Jones; 8 ♀, 2 ♂, lupine, 17-IV-11, P. R. Jones. The examined specimens are deposited in the USNM except where otherwise indicated.

Distribution: United States (California).

Collected from: *Collinsia bicolor* Benth., blue legume, *Lupinus chamissonis* Eschsch., *Lupinus* sp.

Comments: The differences between *longirostrum* and *ehrhornii* are discussed in

the comments for *ehrhornii*. Jones (1912:12) described *longirostrum* based on four females. The collection data of the types consisting of a slide labeled holotype and 2 slides labeled paratypes in the USNM have the same collection locality, Los Gatos, but different collection dates than May, 1910 given in Jones' (1912:12) original description. The date for the holotype is April 9, 1910 and those of the paratypes are April 16, 1910. Furthermore, the host of the types is stated to be "flowers of perennial lupine" but a label on the back of the collection label of the holotype gives the host as *Collinsia bicolor*, which is crossed out. On the back of the type labels written in red ink, presumably by Jones, is "Euthrips longirostrum Jones, ♀, Type." The Jones' specimens were previously deposited in J. D. Hood's collection which is now part of the USNM collection. The holotype and paratype labels are those of Hood. Despite the discrepancies of the collection data, I am accepting the three specimens as types based primarily on the type designated by Jones. The location of the fourth type specimen is unknown to me.

A slide labeled "*Euthrips ehornii* [sic] Moulton, ♂, Type" in red ink has the same original collection data as that of the holotype of *longirostrum*. Although the mouthcone of the male is distorted and the shape cannot be ascertained, I consider this male to be a *longirostrum*, not a paratype. Jones did not mention any males in his description.

The examined material was collected in the coastal counties of California and in about the same time of the year as *ehrhornii*. This species apparently prefers lupines, *Lupinus* sp.

Ewartithrips salviae, new species

(Figs. 5, 12, 18, 23, 29)

Female (macropterous): Body brown with reddish orange internal pigment. Tarsi yellow; foretibiae yellowish brown to completely yellow; mid- and hindtibiae brown with apex yellow, base yellow or brown; femora brown. Ocellar crescent red. Setae brown. Forewing uniformly light yellowish white. Antennae: Segment I brown; II basally brown, distally yellowish brown or yellow; III yellow, extreme apex grayish brown or completely yellow; IV yellow, light brown distal of subapical setae or completely yellow; V yellow, brown in distal $\frac{1}{3}$; VI yellow in basal $\frac{1}{3}$ to $\frac{2}{5}$, brown distally; VII–VIII brown.

Antenna: Segment III slightly constricted distally of subapical setae, 2.3 times longer than wide; III and IV each with a forked trichome, 17–20 μm long on IV; inner sense cone on distal $\frac{1}{3}$ of VI, 20–22 μm long, extending distally to apex of segment.

Head (Fig. 5): Broader than long, cheeks rather straight, occiput sculptured with transverse, widely separated striae or broad reticles, often a transverse line more strongly defined midway between eye and posterior margin. An anteromedial tubercle present or absent. Fore ocellus 12 μm wide. Ocellar setae III long, between fore and hind ocelli on border of ocellar triangle, separated by 22 (20) μm . Postocular setae 5 or 6, seta iii longest, occasionally postocular seta iv longest. Mouthcone conical to elongate conical, 119 (124–148) μm long; mandible 104 (121–138) μm long, maxillary palps 54 (50) μm long.

Pronotum: Longer than head, with anastomosing sculpture. Discal setae 32 (33–38) present, normally shorter than median posteromarginal setae. Posteroangular setae $\frac{3}{10}$ to

$\frac{1}{2}$ as long as pronotum. Posteromarginal setae 3 pairs, occasionally 2 pairs. *Mesonotum* (Fig. 12): Completely sculptured with anastomosing striae; pair of antero-median campaniform sensilla present. *Metanotum*: Median $\frac{1}{2}$ with broad reticles, laterally with longitudinal sculpture; median setae far apart; pair of campaniform sensilla slightly posterior of midlength; a pair of minute median pores in anterior $\frac{1}{3}$.

Forewing: Pointed at apex; 21–23 (17–24) costal setae; 19 (16–19) anterior fringe cilia; fore vein with 7 setae in basal $\frac{1}{2}$, 3–4 setae in distal $\frac{1}{2}$; hind vein with 8–9 (7–10) setae; scale with 5 marginal and 1 discal setae.

Abdomen: Tergites completely sculptured, those on posterior tergites polygonal medially and weaker than on anterior tergites with more transverse striae (Fig. 18). Median setae short and thinner than D2 setae, progressively longer posteriorly, longest on VIII, far apart, slightly anterior of median campaniform sensilla, sensilla progressively closer to posterior margin caudally. Posteromarginal comb on tergite VIII complete with 38 (33–36) microtrichia, 15–20 μm long (cf. Fig. 19). Tergite IX longer than tergite X. Sternite I with 2–3 anteromedian setae (Fig. 23); median pair of setae on VII closer to B2 setae than each other, anterior of posterior margin by 4–5 times their setal bases.

Male (macropterous): Similar to female in color and most morphological structures, but smaller.

Body length 1.29 mm distended. *Antenna*: Length 248 μm . *Abdomen*: Tergite VIII with complete comb. Tergite IX with D1 setae on about midlength (Fig. 29), thick and long; B1 setae between and slightly posterior of D1 setae, on tuberculate bases; B2 setae posterolaterad of D1 setae; posterolateral setae thick, long; B3 setae anteromesad of posterolateral seta; two midlateral setae on each side, 1 longer; pair of campaniform sensilla posterolaterad of B1 setae, another pair anterolaterad of D1 setae. Sternites III–VI with small, transversely oval or elongate glandular area; on III 30 μm wide, 10 μm long; on VI 17 μm wide, 7 μm long.

Measurements of holotype and female paratypes: Body length from interantennal process 1.45 (1.24–1.47) mm distended. Other measurements in microns. *Antenna*: Total length 265 (253–270); length and width of segment I 24 (24–27), 28 (27–30); II 40 (37–40), 27 (27); III 47 (44–47), 20 (20–21); IV 44 (42–44), 20 (20); V 35 (32–37), 20 (20–21); VI 50 (47–50), 20 (20–22); VII 10 (9–10), 9 (9–10); VIII 15 (15), 7 (6–7). Length of head from anterior of eye 106 (100–112); width at eyes 136 (131–143). Pronotum 133 (131–138) long. Forewings 697–699 (711–724) long, 50 wide at midlength. Length of setae: Ocellar setae I 7–12 long, setae II 12 long, setae III 37 (50–62) long; longest postocular setae 40–42 long; pronotal posteroangular setae outer pair 40–47 (32–57) long, inner pair 47 (40–74) long, median posteromarginal setae 22 (20–37) long; median metanotal setae 52–69 long; median setae on abdominal tergite VIII 20–24 long; B1 setae on tergite IX 111 (101–128) long, B2 setae 131 (128–148) long, B3 setae 136 (128–143) long; B1 setae on tergite X 100 (94–117) long, B2 setae 100 (94–109) long.

Material examined: Holotype ♀, 3 ♀ paratypes, Millar Canyon, N. of Cabazon, Riverside Co., California, 2,800' elevation, galls on *Salvia* sp., 18-IV-68, E. Schlinger (68-124) (CAS). Paratypes: CALIFORNIA: Cajon Pass, San Bernardino Co., 1 ♀, *Salvia vayseyi* (T. Porter) Parish, 28-V-59, W. Ewart and O. Brawner (UCR 59-118); Hamet, Riverside Co., 2 ♀, 1 ♂, *Salvia apiana* Jeps., 27-V-83, W. Ewart (UCR 83-63). Paratypes deposited in UCR and USNM.

Distribution: United States (California).

Collected from: *Salvia apiana* Jeps., *S. vayseyi* (T. Porter) Parish.

Etymology: Named after the generic name of host, *Salvia*.

Comments: This species can be distinguished from its congeners by the coloration of the antennae and completely sculptured abdominal tergites.

The forewings of the single male are curled and cannot be measured accurately.

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